

Conference on  
"America's Human Resources to Meet the World Scientific Challenge"  
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THE SOVIET CHALLENGE

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It is certainly timely that a group of experts such as is gathered here should consider America's human resources to meet the scientific challenge. My share of the task is to discuss the challenge presented by Soviet scientific and technological advances.

It is not easy to divide this problem into tidy compartments. Science pervades the Soviet military threat, its industrial and economic progress. Much of the aid proffered to the newly developing countries in the free world includes technological assistance. Even on the subversive side of their operations they have shown great sophistication in the technical and scientific training of their agent personnel.

It is a challenge which calls for united and coordinated action. Hence right at the outset I wish to emphasize the value of measures to help pool the scientific assets of the United States with those of the free world wherever it will advance the common good and mutual defense. Steps in this direction have already been taken. More can and should be done.

I appreciate the security reasons often advanced for moving slowly and here is a field in which I can speak with some authority. The security factor deserves consideration but when properly balanced against the gain from freer scientific exchange, there will be plenty of leeway to go further than we have.

If legislative bars against certain phases of our cooperation with other countries in the nuclear field are removed, it will be a major step forward. Exchanging ideas on weapons development will certainly be of value in the field of intelligence since it would improve our ability to analyze and understand the nature of the Soviet nuclear threat.

Other informational exchanges between countries where each has the capacity to help the other will advance the common cause. For us and our allies to keep scores of top scientists working separately and mutually uninformed on the same problems may be a waste of scarce resources that we can ill afford.

In your earlier meetings today I understand you have been considering the building up and marshaling of America's human assets, particularly in the scientific field, to meet the Soviet threat. In the somewhat circumscribed area of my own work, much of my time during the last seven years has been directed to a somewhat

similar end, namely how scientific assets and techniques can be most effectively used to increase our overall ability to interpret developments in the Soviet Union.

One result of this study has been to emphasize the need for current appraisals of our relative position to the Soviet in technical fields of critical importance to national security. The missile field is a good example.

Relative positions of course change from time to time as one side or the other places greater emphasis in a particular field of endeavor. This calls for constant study and re-study, but with a proper perspective of where we stand relative to the Soviet Union we can develop our foreign and defense policies with a better basis for sound decision.

During the past few months the world has had a spectacular demonstration of the great technical competence of the Soviet, notably in the field of earth satellites and ballistic missiles.

To those who have been closely following developments in the Soviet Union these came as no great surprise.

Contrary to what may be the generally accepted view, these happenings have not caused us to make any basic changes in our earlier estimates of the Soviet challenge. It was serious before. It appears to be slightly more so today.

Here and there time tables of when various Soviet new weapons might come into use have been moderately advanced, particularly in the ballistic missile field. Soviet Sputniks and recent ballistic missile tests have not altered the overall appraisals of Soviet capabilities and intentions reached a year or more ago.

We must really thank the Soviet for having dramatized their competence and mightily reduced, in this country at least, the ranks of those who could not bring themselves to believe in the high technological capability of the Russians.

Long complacently accustomed to being first, it has been a shock to the American public to find that that is not the case in a particular field and an important one. We were first in the development of long range aviation, in the dramatic break-through in the atomic field and in thermonuclear fusion, and then, as evidenced by the atomic submarine, in the application of atomic power in an important military area. On analysis one would find that the margin of our lead, here and there, had been tending to narrow.

Then in a dramatic way the Soviets had their "first" and there is a tendency to feel that there was some failure to keep the American people advised as to Soviet scientific progress which led to this result.

Also, many have instinctively assumed that in the fields of scientific achievement a free enterprise system would inevitably lead a state like the Soviet whose economy was controlled by a communist-type state dictatorship.

Achievements do not depend so much on the type of government, so long as the latter is technically competent and has a willing or subservient people at its beck and call. It depends on the goals and priorities set, the promptness and the correctness of the decisions reached, and the energy applied in terms of man hours with the proper tools and equipment.

Under normal conditions a liberal free enterprise society concentrates on the development of what the people want to improve their living standards. In a society controlled by dictatorial leaders, with the centralization and socialization of production, the leaders are able, for a time at least, to fix the goals and priorities. What the mass of the people want comes second. I have said "for a time." It may be difficult to carry on such a policy indefinitely. Some day the people may rebel against such programming.

The USSR has a national product of some 40% of our own. If one includes on our side the segment of the free world allied with us and adds to the Soviet the questionable assets of the unhappy European satellites, the margin in favor of the West is much greater.

Yet the Soviet today are producing in the military field, hardware and assets very nearly equivalent to our own. The fact that they are able to do this with less than half of our industrial

potential is due largely to three factors: (1) the different cost basis for military manpower as contrasted with that for us; (2) the larger percentage of gross national product devoted to military ends; (3) the concentration of scientific competence in military fields.

Under these circumstances is it surprising that from time to time we will have the shock of finding that the Soviet have outstripped us in some particular military field where for longer periods of time they have put in more concentrated effort than we, as for example, in the missile field.

Granting something like equality of brain power applied on each side, the answer comes close to being a mathematical one and there is no reason to seek any mysterious or sinister cause.

The fact is that since shortly after the close of the war in 1945, when they took over the German missile hardware and a large group of German scientists with their blueprints and plans in Peenemunde and elsewhere, they have spent in this field more man hours than we. They have done it under highly competent Soviet scientific and technological leadership with the necessary tools, equipment and priorities. While they profited greatly by German technological achievement up to 1948, during the last decade it has been largely a native Soviet achievement.

History is full of examples where the high standard of living countries -- placing emphasis upon those things which make the rounded, developed and cultured human being with leisure for a broadened life -- have failed to comprehend the extent and nature of external threats from the Spartas which have concentrated on military might. All you need do is read your history from the Greek and Roman days right down to England and France before World War II, or even our own history.

A free people such as ours seem to require at periodic intervals dramatic developments to alert us to our perils.

Some people seem to think that this shock treatment should be replaced by a continuous process of indoctrination which could and should be furnished by government officials. I am somewhat doubtful as to the efficacy of this.

Most Americans seem to be from Missouri. Seeing is believing. By and large, the press does a good job in this field. Its sources of information are wide and varied. Jeremiads from government leaders are generally regarded as tinged with political or budgetary motives. It was only by orbiting our own Explorer that an effective answer was made to the American people as to our own technical competence in the missile field. No amount of speech making would have done it.

Recently it has been hinted that if only the Central Intelligence Agency had been believed, everything would have been well. This is flattering but a great over-simplification. There never has been a time in history to my knowledge when intelligence has had as clear an opportunity to get its views over as it has had in this country in recent years. The National Security Act of 1947, creating the Central Intelligence Agency, has given Intelligence a more influential position in our government than Intelligence enjoys in any other government of the world. If in our government, intelligence estimates have not always had the impact that in the light of hindsight they may have deserved, responsibility must be shared by the intelligence producer. We have the chance to sell our wares.

No intelligence appraisal could have had the impact of a Sputnik.

Maybe it was necessary that over the last decade in our relations with the USSR, we had to have a series of political, economic and military Sputniks -- costly as some have been -- to keep us periodically alerted to our dangers, though once a particular crisis is over, we quickly forget the past.

First came the Soviet threat against Western Europe, Greece and Turkey after World War II. This led to the Marshall Plan and

the Truman Doctrine. Then there was the Berlin Blockade in 1948 and the Korean War in 1950. Each of these, plus the tragic loss of China and Czechoslovakia, has helped to alert us to the elements of political subversion and war by proxy in the communist menace. Hungary should have convinced us that the Soviet will not hesitate to use brute force in what they choose to call their area of influence. Now with the Sputnik and ballistic missiles, the free world knows better the nature of the competition we face in the field of science and military technology.

Knowledge of the nature of this particular Soviet scientific challenge has been brought home to the American people through the length and breadth of the land. It is the greatest advertising job ever done. The Soviet really wrote it in the sky.

For a time at least, it will not be hard to convince anybody that we really are up against a competitor with a highly developed scientific and technical competence. We can thank the Soviet that this particular selling job was done effectively in 1957 and not delayed until 1958 or later.

Under these circumstances we shall be better able than before to mobilize our assets, human and material.

What are the immediate issues, the challenges we face?

There is no evidence, as I see it, that the Soviet Union presently intends to follow a policy which in their view would involve the serious risk of nuclear war with the United States. They most certainly have a healthy respect for our present military capabilities and our great industrial potential. They recognize the present limitation on their own. They recognize that nuclear war at this time would result in devastating damage to them. They probably question their present capability to deal a knockout blow and consequently would expect that their own devastation under retaliatory attack would be very great.

Comparative estimates of military strengths do not lie in my field of particular competence. This much I can say. I do not know of any American experts in the field whose views I respect, who take the position that today the Soviet Union has an overall military capability superior to our own.

What rightfully concerns us, however, is the dynamic growth in Soviet military and industrial power. Their further successes in the ballistic missile field and in the development of an arsenal of weapons with nuclear warheads would tend to change the nature of the threat to our security.

I am by no means suggesting that our concern is solely in the missile field or that we take seriously Khrushchev's remark about treating aircraft as museum pieces. This quip was probably motivated, in part, by the desire to downgrade our own Strategic Air Command during a period when the Soviet were in a position to flaunt their success with the guided missile. After all, we do not credit the Soviet with the industrial potential of developing and producing at the same time and with equal priority and on a massive scale all possible weapons in the modern military armory. They must make choices just as we.

We do have some evidence, however, that as much as a decade ago the Soviet turned to the guided missile as a challenging competitor to the bomber. What we badly needed back in 1945 was a Billy Mitchell for ballistic missiles.

Today we need wisely to use the time, which intelligence appraisals indicate we have, to build up our own capabilities and to see to it that any gap in time, during which they may have any superiority in the missile field, is reduced to negligible proportions and counter-balanced by the use of our substantial geographic advantages and general retaliatory power.

In most of our scientific breakthroughs we have had the disadvantage of being the front runner; the pioneer. In guided missiles

we can profit by the experience of others and we have just received a fine dividend of confidence in our own achievements.

We are alerted to the problem, to the technical competence of the opposition. We are still moving from a position of strength and forewarned should be forearmed.

The mobilization of human and other resources to meet the Soviet challenge in the military field will be an easier task than to mobilize to meet international communism's programs of subversion and economic penetration. Yet the latter today are their first lines of attack, with the military buildup remaining in reserve.

They have given us nothing quite as dramatic as the Sputnik to advertise what they are doing in the Middle East, Asia and Africa. Possibly they learned a lesson from the Marshall Plan and have no stomach for inciting us into a new competition on any grand scale in the uncommitted areas of the world,

But if we should ignore these warning signs and go missile-minded to the exclusion of adequate defense against other dangers, the Sputnik can become a kind of Trojan horse. We might win the military race and yet lose great areas of the world that are vital to our own national security.

The international communist apparatus with its communist parties and cells, its economic, technical, and military aid programs based on Moscow, Prague and Peiping, has a closely orchestrated, well disguised mechanism for the advancement of its cause. The economic side of it outwardly looks somewhat like our own -- until the objective is uncovered.

Communists work in and through the parliaments of many countries of the world. They try to use the democratic processes in order to defeat the basic aims of a free form of government. They had a part in writing many of the constitutions in the free world in the early post-war days and did so with the very objective of putting strong authority nowhere and helping to produce chaos everywhere.

The policy of keeping countries divided -- Germany, Korea, Viet Nam and until recently Austria and Laos -- was an example of their techniques. This development is beginning to boomerang as the free peoples in the divided areas are furnishing studies in contrast between what a people working in freedom can do as contrasted with people under the domination of Moscow or Peiping.

Soviet progress in the scientific and technological field is used as a powerful argument in their appeal to the uncommitted areas.

Well before Sputnik the peoples in these areas were deeply impressed by the fact that the USSR in less than four decades had come from being a backward country into the position of the second greatest power in the world and a leader in the scientific field.

Certainly we should be more effective in bringing home to these people what has actually transpired in the areas that have been subject to Soviet colonialism or have been the unwilling objects of Soviet exploitation and domination.

Unfortunately, distance seems to lend enchantment and we can hardly expect the people of Java, to take only one instance, to understand fully the dangers which Soviet communism means for them.

Meanwhile in the Middle East, Africa and in South and Southeast Asia, the Soviet programs of arms and economic and scientific aid have helped to fan the flames of nationalism and anti-colonialism. The total of communist aid, economic, scientific and military, does not approach ours but they have cleverly concentrated on certain particular countries where they feel they can make the most impact.

Soviet educational programs are helping to build up a reservoir of technicians equipped in the lore of foreign countries. They also bring to Moscow University and other Soviet and satellite institutions large numbers of native students for training, particularly in the scientific

fields. If the Soviet scientific educational program continues at its present pace, they will have a growing reserve of trained scientists for export.

I trust that one of the results of this meeting may be to help us to find in the free world competent technicians willing to journey to the four corners of the earth to help build up the indigenous capabilities of the new countries. In any study of our own human resources to meet the scientific challenge it is well to remember that this cannot be done solely on the drawing boards of our own scientific institutions. It will also have to be done in the steel mills of India, on the dams of the great rivers of Asia and Africa, and in the industrial plants of the newly freed countries.

The contest for the minds and allegiance of millions of people is just beginning to be engaged. We cannot afford to neglect it.

I have tried to sketch the nature of the military, subversive and economic challenges of the USSR as we face them today. As one looks at the longer perspective, it is necessary to take into account the plans of Communist China to press forward on its own program of industrialization and militarization.

We have the capacity to meet these present challenges. They are definite in nature, measurable in amount and have back of them

far less in the way of assets, human and material, than we and our allies can muster if we will. But this is not just one confrontation. The challenge may be one of considerable duration.

The Soviet Union is still programming a rapid increase in its industrial production. It boasts that it will eventually close the gap between its own production and ours. If this program is even partially realized and also assuming some increase in the consumer's share of the total national production, the Soviet, if they are so minded, can year after year put ever increasing amounts into their military establishment and foreign economic programs.

To the extent that the Sino-Soviet peoples are willing, with Spartan determination, or with unquestioning obedience to arbitrary authority, to follow such a policy, they can make the going harder and harder for us. Undoubtedly, no small segment of their future effort, as in their past, will go into science.

A distinguished Indian editor who visited successively the USSR and the United States, put this question repeatedly to the people with whom he talked, "What is the purpose of your system, of your society?" As well can be imagined, he received a multiplicity of answers from Americans, but in one form or another, they had to do with the improvement of the lot of the individual, man and

woman. In the Soviet Union, he reports, he received one universal response from people of low and high degree, "The purpose of our system is the advancement of science."

For many years I have felt that the greatest hope for the future in our relations with the Soviet Union lay in their advancement in education even though in the short run this has been largely harnessed to their military machine.

Education, particularly in science, was essential to permit the Soviet effectively to compete in the power struggle in which it had engaged itself. It has accomplished this initial purpose.

Great scientists are great thinkers and thought has no narrow military limitations. It would seem incredible if the horizons of Soviet scientists and educators do not become greatly widened over the years and their talents devoted more directly to meeting the needs of the Soviet people for a more satisfying form of life.

It would be pleasant indeed if an enforceable international agreement could be reached that no more than say 5 or 10 per cent of the gross national product of a country could be diverted from the needs of the people to the production of armaments. As this is hardly practicable we must place our hopes that the future education in the Soviet Union will produce so many people who will demand this

result that no government could act otherwise.

While we must be ready for those forms of sacrifice which are necessary to meet the challenge of the Soviet Union, we must also seize the opportunities offered to help their education build a new life for the Soviet people.

Education may then be the key to the solution of problems which otherwise would seem insoluble.

We have recently been celebrating the 150th anniversary of the birth of General Robert E. Lee. It is interesting to note a passage in the book by a German Major of the Royal Prussian Engineers who was in the United States as a military observer in the Civil War. He was commenting on the fact that Lee's philosophy in his role as commander was to get his forces to the right place at the right time, and then trust his division and brigade commanders to do the rest. As an instance of this he writes the following, "During the battle of Chancellorsville, May 3, 1863, at the height of the combat, I stood beside the General under pretty heavy fire and an interesting episode of the battle was taking place before us. In spite of the great excitement in which the progress of the battle kept the great leader, he spoke to me, to my great astonishment, about the future education of the people."

Robert E. Lee had the genius for getting at the basic truths.